

WHAT IS CLAIMED IS:

1. An uneven pattern sensing device, comprising:

scanning lines and signal lines formed on a substrate in a grid pattern;

switching elements formed on the substrate in each grid and connected to the scanning lines and the signal lines;

an insulating film, formed on the substrate so as to cover the switching elements, having contact holes each of which is a perforation;

sense electrodes formed on the insulating film and connected to the switching elements via the contact holes; and

a protective film formed on the insulating film so as to cover the sense electrode, wherein the insulating film has a flat area, which excludes a surface where each contact hole is provided, on which the sense electrode is provided.

2. The uneven pattern sensing device as set forth in claim 1, wherein the surface on which the sense electrode is formed is flat when the insulating film is formed.

3. The uneven pattern sensing device as set forth in

claim 1, wherein the insulating film is formed by application of an insulating material.

4. The uneven pattern sensing device as set forth in claim 1, wherein the insulating film is made of an organic matter.

5. The uneven pattern sensing device as set forth in claim 4, wherein the insulating film has photosensitivity.

6. The uneven pattern sensing device as set forth in claim 4, wherein the insulating film has thickness of not less than  $1\mu\text{m}$  and not more than  $5\mu\text{m}$ .

7. The uneven pattern sensing device as set forth in claim 1, wherein the sense electrode is provided so as to be overlapped with at least either one of the scanning lines and the signal lines.

8. The uneven pattern sensing device as set forth in claim 1, wherein the sense electrode is provided so as to be overlapped with the switching elements.

9. The uneven pattern sensing device as set forth in

claim 1, wherein a shade film is provided on the switching elements.

10. The uneven pattern sensing device as set forth in claim 1, wherein the sense electrode has a shading property.

11. The uneven pattern sensing device as set forth in claim 1, wherein the insulating film has a shading property.

12. The uneven pattern sensing device as set forth in claim 1, further comprising an auxiliary capacity electrode for forming a capacity with the sense electrode.

13. The uneven pattern sensing device as set forth in claim 1, wherein an auxiliary capacity which is formed with either one of the sense electrode and an electrode having a same electrical potential as the sense electrode is provided in a layer under the insulating film.

14. The uneven pattern sensing device as set forth in claim 1, wherein the substrate is an insulating property.

15. The uneven pattern sensing device as set forth in claim 14, wherein the substrate is a glass substrate made of glass.

16. The uneven pattern sensing device as set forth in claim 14, wherein the substrate is made of plastic.

17. The uneven pattern sensing device as set forth in claim 15, wherein at least either one of a drive circuit for applying a drive signal to the scanning lines and a sense circuit for sensing a signal from the signal lines is directly mounted on the glass substrate.

18. The uneven pattern sensing device as set forth in claim 15, wherein at least either one of a drive circuit for applying a drive signal to the scanning lines and a sense circuit for sensing a signal from the signal lines is monolithically formed on the glass substrate.

19. The uneven pattern sensing device as set forth in claim 18, wherein the drive circuit and the sense circuit are made of either one of polysilicon and continuous grain boundary silicon.

20. The uneven pattern sensing device as set forth

in claim 1, wherein the protective film is made up of a dielectric film having a relative permittivity of not less than 5.

21. The uneven pattern sensing device as set forth in claim 20, wherein the protective film is made of  $\text{SiN}_x$ .

22. The uneven pattern sensing device as set forth in claim 1, wherein the protective film is made up of a dielectric film having a relative permittivity of not less than 10.

23. The uneven pattern sensing device as set forth in claim 22, wherein the protective film includes a matter selected from the group consisting of  $\text{Ta}_2\text{O}_5$ ,  $\text{TiO}_2$ ,  $\text{SrTiO}_3$ ,  $\text{BaTiO}_3$ , and  $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$ .

24. The uneven pattern sensing device as set forth in claim 1, wherein the protective film is made up of a fluororesin.

25. The uneven pattern sensing device as set forth in claim 24, wherein the protective film is formed by a dry transferring method.